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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 08/825,400      | 03/28/1997  | HARUHIKO MURATA      | 040679/6439         | 9867             |

7590

01/29/2002

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EXAMINER

CUNEO, KAMAND

ART UNIT

PAPER NUMBER

2827

DATE MAILED: 01/29/2002

Please find below and/or attached an Office communication concerning this application or proceeding.



## UNITED STATES DEPARTMENT OF COMMERCE

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| APPLICATION NUMBER | FILING DATE | FIRST NAMED APPLICANT | ATTY. DOCKET NO. |
|--------------------|-------------|-----------------------|------------------|

EXAMINER

ART UNIT

PAPER NUMBER

24

DATE MAILED:

This is a communication from the examiner in charge of your application.  
COMMISSIONER OF PATENTS AND TRADEMARKS

## OFFICE ACTION SUMMARY

- ☒ Responsive to communication(s) filed on 12/21/01
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 D.C. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claims

- ☒ Claim(s) 13-28 is/are pending in the application.
- ☐ Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- ☒ Claim(s) 13-28 is/are rejected.
- ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- ☐ Claim(s) \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- ☒ The proposed drawing correction, filed on 6/4/98 is ☒ approved ☐ disapproved.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

- ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☒ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been received.
- ☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_
- ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

- ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

- ☐ Notice of Reference Cited, PTO-892
- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_
- ☐ Interview Summary, PTO-413
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Notice of Informal Patent Application, PTO-152

--SEE OFFICE ACTION ON THE FOLLOWING PAGES--

## DETAILED ACTION

### *Claim Objections*

1. Claims 19 and 23 objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claims 19 and 23 depend from claims 18 and 22 and recite that the tops of the bumps are equal in diameter to the pads. Parent claims 18 and 22, however, recite that the tops are smaller.

### *Treatment of Claims Based on Prior Art*

2. 35 USC 102 includes the following sections which state:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 3719 (c) of this title before the invention thereof by the applicant for patent.

3. Claims 13-17, 20-21, 24-28 are rejected under 35 U.S.C. 102(e) as being anticipated by Degani.

Degani discloses a substrate (reference number 32) having a joining surface (top surface of substrate); and a plurality of solder bumps disposed on the joining surface of the substrate in such a manner as to have leveled tops (see Figs 3 and 5). The tops of the bumps are coplanar, and circular, the circle having a smaller diameter than the diameter of the circular pad.

Claims 13-23 are product-by-process claims. Please note that in such claims, patentability is

determined by the product, not the process. See MPEP 2113 and *In re Thorpe*. 227 USPQ 964, 966.

Claim 24-27: The bumps are leveled by jig (25), and the bumps are heated and melted.

Claim 28: See figure 1. The substrate is (12), the bumps are (11), the jig is (13,14) and the molten masses of the paste come into contact with the flat surface of the jig to form flattened bumps.

4. 35 USC 103(a) states:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Obviousness under 35 USC 103(a) is determined against a background established by the factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), which are summarized in items 1-4 below.

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 USC 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 USC 103(c) and potential 35 USC 102(f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 18-19, 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Degani as applied to claims 13 and 20 above.

Degani discloses the claimed invention except for the shape of the pads; however, various shaped, including circular, pads are known in the art of circuit board connections. It would have been obvious to one having ordinary skill in the art at the time the invention was made to choose any known shape, including circular, as the shape of the pad, as it has been held that a mere change in shape involves only routine skill in the art. *In re Dailey*, 149 USPQ (CCPA 1976)

***Response to Arguments***

7. There are no unanswered arguments pending in the application.

***Closing***

8. Any inquiries related to the examination of this application should be directed to Ex. K. Cuneo at (703) 308-1233 or her supervisor SPE D. Talbott at (703) 305-9883. Inquiries of a general nature should be directed to the receptionist of Group 2800 at (703) 308-0956. The fax numbers for Group 2800 are (703) 308-7722 and 7724.



K. Cuneo  
Primary Examiner  
January 27, 2002